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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

RAHMAN, FAHMIDA

ART UNIT

PAPER NUMBER

2116

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/632,412	Applicant(s) ACQUAVIVA ET AL.	
	Examiner Fahmida Rahman	Art Unit 2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/31/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-20 are pending.

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 7/31/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 1 recites an improvement of real time operating system comprising a power manager layer being arranged to exchange information with a processor, application and hardware resource to provide real time power management. However, it is not apparent that the invention is limited to a tangible embodiment, since the operating system and power management layer could be implemented as software. Even though the power manager layer exchanges information with a processor and hardware resource, it is not apparent that these components are an integral part of the claimed invention. The limitation "power manager being arranged to exchange information with processor and hardware resource" does not mandate the presence of a hardware resource and processor, since the software can be configured

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such that it can exchange information with other hardware without the actual existence of a hardware piece in the system. Thus, the claimed invention as recited in claim 1, may be a piece of software that is configured to exchanged information with hardware pieces. Therefore, the claimed invention lacks tangibility.

Claims 2-11 are rejected for similar reason.

In the interest of compact prosecutions, the claims are examined as if executed on a processor or other hardware.

Claim Objections

Claim 10 is objected to because of the following informalities:

In claim 10, "said driver layer" in line 2 should be "a driver layer" as a driver layer has not previously been recited.

Similarly, "said hardware abstraction layer" in line 8 should be "a hardware abstraction layer".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "a plurality of power states" in line 6. It is not clear whether it is intended to be the same or different from the recitation of "a plurality of power states" in lines 4-5. It is necessary to establish a relationship between the two recitations.

Claims 17-20 depend on claim 16. Thus, they carry the same ambiguity of claim 16.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1, 12, 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Oehler et al (US Application Publication Number 2004/0003303).

For claim 1, Oehler et al teach the following limitations:

In a real time operating system (310) for supporting at least one application (117), a processor (331 is System hardware that includes processor such as 202 a-d) and at least one hardware resource (331 and 333), the improvement comprising, in combination:

a) a power manager layer (the combination of 313 and 321); and

b) said power manager layer being arranged to exchange information with said at least one application, said processor and said at least one hardware resource (lines 12-14 of [0036] of page 3 mention that 313 can tell the operating system when various components should be in particular power states. 313 needs to access 451 to get the information about system components. The table 451 exchanges information with different components to update the power history. Lines 1-2 of [0038] of page 4 mention that the power authority is an application running on operating system) **to provide real time power management** ([0026] mentions that power management can be dynamic. Thus, the power management is real time power management) **responsive to said information** (steps 707, 709, 811 show that the OS is updating power table. [0036] of page 3 mentions that ACPI OS itself control the component power state).

For claim 12, Oehler et al teach the following limitations:

A real time power management system (abstract) for a processor-driven hardware platform (Fig 1 and Fig 2) for supporting at least one application (117; [0038] of page 4 mentions that power authority is an application running on operating system), a processor (331 is System hardware that includes processor such as 202 a-d) said platform having at least one hardware resource (331 and 333) wherein said processor is characterized by a plurality of power states and said at least one hardware resource is characterized by a plurality of power states ([0039] of page 4 mentions that the components have plurality of power states. In addition, Fig 4 shows the plurality of power state for processor and hardware components), said power management system comprising, in combination:

- a) an operating system (310) for controlling said processor and said at least one hardware resource (lines 10-17 of [0036] of page 3);**
- b) said operating system including a power manager layer (313 and 451) arranged to select a processor power state and a power state of said at least one hardware resource (lines 12-14 of [0036] of page 3 mention that 313 can tell the operating system when various components should be in particular power states. 313 needs to access 451 to get the information about system components. The table 451 exchanges information with different components to update the power history. Lines 1-2 of [0038] of page 4 mention that the power authority is an application running on operating system) in response to a real time input ([0026] mentions that power management can be**

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dynamic. Thus, the power management is real time power management as shown in 805) **from said at least one application** (steps 707, 709, 811 show that the OS is updating power table. [0036] of page 3 mentions that ACPI OS itself control the component power state. Step 701 shows that the power authority is exchanging information with OS and power table for power management. Thus, ACPI OS performs power management by taking input from power authority).

For claim 16, Oehler et al teach the following limitations:

A method for controlling power consumption (abstract) in a hardware platform (Fig 1 and Fig 2) **responsive to information from at least one application** (117; [0038] of page 4 mentions that power authority is an application running on operating system), **said platform including a processor having a plurality of power states and at least one hardware resource characterized by a plurality of power states** ([0039] of page 4 mentions that the components have plurality of power states. In addition, Fig 4 shows the plurality of power state for processor and hardware components), **said method comprising the steps of:**

organizing said operating system (combination of 310 and 321) **into a kernel** (311), **a driver layer** (315), **a hardware abstraction layer** (ACPI Device Tree in ACPI Table 325), **and a power manager layer** (combination of 313 and 325);

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applying at least one real time input from said at least one application to said power manager layer (steps 707, 709, 811 show that the OS is updating power table. [0036] of page 3 mentions that ACPI OS itself control the component power state. Step 701 shows that the power authority is exchanging information with OS and power table for power management. Thus, ACPI OS performs power management by taking input from power authority);

determining a power management policy in said power manager layer in response to said at least one real time input (step 709 in Figure 7 mentions that the the power management is performed with updated power table values. Thus, the ACPI system determines the power management policy in ACPI OS depending on the input taken from power authority);

communicating said power management policy from said power manager layer to said processor and said at least one hardware resource (Fig 4 shows the various power states for processor and hardware. Thus, the power management layer communicates the power management information to the components including processors and hardware).

For claims 17 and 18, note [0041] of page 4 and 451, which shows about various power states of processor and hardware resources.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-11, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oehler et al (US Patent Application Publication 2004/0003303), in view of Intel ACPI-CA.

For claim 2, [0038] of page 4 mentions that the power authority application receives message from OS. Lines 16-17 of [0037] of page 4 mention that the power table is an ACPI table. ACPI provides ACPI API to the OS. Thus, the communication between power authority application and ACPI OS should include API call.

The system of Oehler et al makes use of ACPI OS for power management. That includes API calls, since power management is performed by OS. However, Oehler et al do not explicitly mention API calls for power management.

The Intel implementation of ACPI-CA provides varieties of API to the operating system. ACPI-CA provides high-level ACPI API to the operating system. The OS uses this API to implement power management, device configuration and thermal management. Table 1 of ACPI Component Architecture shows the API used for power management

and device configuration. Thus, all the communications of power authority to ACPI OS should be through API.

It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teachings of Oehler et al and ACPI-CA. One ordinary skill in the art would have been motivated to include ACPI-CA, since ACPI-CA is used by many open source operating systems including FreeBSD and Linux.

For claim 3, the program call from power authority to ACPI OS should have a start and end notification. Lines 7-9 of [0045] of page 4 mention that the OS provides information to power authority during varying fixed interval time. Thus, there should be a notification that the power authority to acquire information from OS. In other words, there must be a notification that the power authority application started and ended the acquiring of information.

For claim 4, lines 9-11 of [0045] of page 4 mention that power authority creates a historical power consumption representation. Steps 707 and 809 mention that the information is sent to OS. Thus, the utilization profile is sent to the ACPI OS power management code 313.

For claim 5, Fig 7 and Fig 8 show that the power authority performs power management of hardware components through power table. Thus, there must be a notification from

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power authority to ACPI OS that a particular hardware resource need power management. In such a case, the power authority application will manage power to the resource by the API call, since the API call is necessary for power management in ACPI system.

For claim 6, 451 comprises the hardware abstraction layer 401, 403, 405 and 407. Thus, 451 can be thought as a hardware abstraction layer. Since, 451 are part of ACPI, the API is necessary to implement power management, device configuration and thermal management. The OSPM 313 needs to exchange information with 451 through API call for power management.

For claim 7, the combination of 315 and 317 is the driver layer. Since this is an ACPI OS system, the call should be performed through API for power management and device configuration.

For claim 8, 451 in Figure 4 shows the processor and hardware power state selection mode.

For claim 9, [0044] of page 4 mentions that the resource is allocated by the power authority. Since power authority works in conjunction with ACPI OS, the power manager layer must have a corresponding resource allocation table to allocate the resource as specified by the power authority.

For claim 10, the OS uses API for device configuration and power management. Thus, the device driver 315 receives API call containing power instructions for managing power of a resource. The device driver has to generate appropriate command to control power of that particular resource.

For claim 11, it is well known in the art that ACPI system comprises ACPI namespace that exchanges information with device drivers to actuate the device. Since, ACPI namespace is a software database, the interaction has to be performed through program call.

For claim 13, The system of Oehler et al makes use of ACPI OS for power management. That includes API calls, since power management is performed by OS. The call from power authority to power table has to include API, since accessing ACPI power table should include ACPI API call.

However, Oehler et al do not explicitly mention API calls for power management.

The Intel implementation of ACPI-CA provides varieties of API to the operating system. ACPI-CA provides high-level ACPI API to the operating system. The OS uses this API to implement power management, device configuration and thermal management. Table 1 of ACPI Component Architecture shows the API used for power management

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and device configuration. Thus, all the communications of power authority to ACPI OS should be through API.

It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teachings of Oehler et al and ACPI-CA. One ordinary skill in the art would have been motivated to include ACPI-CA, since ACPI-CA is used by many open source operating systems including FreeBSD and Linux.

For claim 14, the program call from power authority to ACPI OS should have a start and end notification. Lines 7-9 of [0045] of page 4 mention that the OS provides information to power authority during varying fixed interval time. Thus, there should be a notification that the power authority to acquire information from OS. In other words, there must be a notification that the power authority application started and ended the acquiring of information.

For claim 15, Fig 7 and Fig 8 show that the power authority performs power management of hardware components through power table. Thus, there must be a notification from power authority to ACPI OS that a particular hardware resource need power management. In such a case, the power authority application will manage power to the resource by the API call, since the API call is necessary for power management in ACPI system.

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For claims 19 and 20, the system of Oehler et al makes use of ACPI OS for power management. That includes API calls, since power management is performed by OS. However, Oehler et al do not explicitly mention API calls for power management.

The Intel implementation of ACPI-CA provides varieties of API to the operating system. ACPI-CA provides high-level ACPI API to the operating system. The OS uses this API to implement power management, device configuration and thermal management. Table 1 of ACPI Component Architecture shows the API used for power management and device configuration. Thus, all the communications of power authority to ACPI OS should be through API. The API call should transfer the input from power authority to ACPI power table.

It would have been obvious to one ordinary skill in the art at the time the invention was made to combine the teachings of Oehler et al and ACPI-CA. One ordinary skill in the art would have been motivated to include ACPI-CA, since ACPI-CA is used by many open source operating systems including FreeBSD and Linux.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fahmida Rahman whose telephone number is 571-272-8159. The examiner can normally be reached on Monday through Friday 8:30 - 5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on 571-272-3670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fahmida Rahman
Examiner
Art Unit 2116


LYNNE H. BROWNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100